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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SINGH, DALZID E

ART UNIT	PAPER NUMBER
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2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/673,933

Applicant(s)

KAO ET AL.

Examiner

Dalzip Singh

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4-6, 8-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vrazel et al (US Pub. No. 2003/0198478) in view of Penninckx et al (US Patent No. 6,563,623).

Regarding claim 1, Vrazel et al disclose a communication method for multilevel coded optical signal transmission, as shown in Fig. 4B, comprising the step of:

driving at least two modulators (470 and 475) with at least two data signals (D_1 and D_2) to generate an optical signal using differential phase shift keying and amplitude shift keying modulation (see paragraph [0030]).

Vrazel et al disclose driving the modulators with data signals and differs from the claimed invention in that Vrazel et al do not disclose the data signals are synchronized and have the same data rate. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the data signals to be synchronous and having the same data rate.

Furthermore, Vrazel et al disclose transmission of optical signal and differ from the claimed invention in that Vrazel et al do not specifically disclose that the optical

signal has a prescribe optical signal. However, it is well known that the optical signal has extinction ratio. Penninckx et al is cited to show such well known concept. In col. 5, lines 13-16 and col. 6, lines 3-10, Penninckx et al teach of extinction ration in optical signal. Therefore it would have been obvious that the optical signal of Vrazel et al has extinction ratio.

Regarding claims 2 and 16, the system receiving the optical signal using a receiver including a balanced detector for detection of the differential phase shift keyed portion of the optical signal (see paragraph [0075]).

Regarding claims 4, 5, 10 and 11, Vrazel et al do not disclose that the amplitude shift keying modulation generates chirp or chirp-free optical signals. However, it would have been obvious to an artisan of ordinary skill in the art to generate chirp or chirp free optical signal.

Regarding claims 6 and 12, in view of combination above, Penninckx et al disclose an prescribed extinction ratio of between about 5 dB and about 10 dB (see col. 5, lines 13-16).

Regarding claim 8, Vrazel et al disclose a transmitter apparatus for generating differential phase amplitude shift keyed optical signals, shown in Fig. 4B, comprising:

a modulator means, including at least two modulators (470 and 475) driven by data signals (D_1 and D_2), adapted to generate an optical signal using differential phase shift keying and amplitude shift keying modulation (see paragraph [0030]).

Vrazel et al disclose driving the modulators with data signals and differs from the claimed invention in that Vrazel et al do not disclose the data signals are synchronized and have the same data rate. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the data signals to be synchronous and having the same data rate.

Furthermore, Vrazel et al disclose transmission of optical signal and differ from the claimed invention in that Vrazel et al do not specifically disclose that the optical signal has a prescribe optical signal. However, it is well known that the optical signal has extinction ratio. Penninckx et al is cited to show such well known concept. In col. 5, lines 13-16 and col. 6, lines 3-10, Penninckx et al teach of extinction ration in optical signal. Therefore it would have been obvious that the optical signal of Vrazel et al has extinction ratio.

The clause "adapted to" is essentially a statement of intended or desired use. Thus, these claims do not serve to patentably distinguish the claimed structure over that of the reference. See *In re Pearson*, 181 USPQ 641; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 512 USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

Regarding claim 9, the at least two modulators are modulators selected from the group consisting of a Mach-Zehnder modulator, a single-waveguide modulator, or an electro-absorption modulator (see paragraphs [0036, 0058-0060]).

Regarding claim 13, as shown in Fig. 4B, the transmitter comprise a differential encoder (precoder) means coupled to the modulator means.

Regarding claim 15, Vrazel et al disclose an optical transmission system, as shown in Fig. 4B, comprising:

a first modulator (475) adapted to receive a first data signal (D_2);

a second modulator (470) coupled to the first modulator and adapted to receive a second data signal (D_1), and wherein the first and second modulators are adapted to generate a multilevel coded optical signal using differential phase shift keying and amplitude shift keying modulation (see paragraph [0030]).

Vrazel et al disclose driving the modulators with data signals and differs from the claimed invention in that Vrazel et al do not disclose the data signals are synchronized and have the same data rate. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the data signals to be synchronous and having the same data rate.

Furthermore, Vrazel et al disclose transmission of optical signal and differ from the claimed invention in that Vrazel et al do not specifically disclose that the optical signal has a prescribe optical signal. However, it is well known that the optical signal has extinction ratio. Penninckx et al is cited to show such well known concept. In col. 5, lines 13-16 and col. 6, lines 3-10, Penninckx et al teach of extinction ration in optical signal. Therefore it would have been obvious that the optical signal of Vrazel et al has extinction ratio.

The clause "adapted to" is essentially a statement of intended or desired use. Thus, these claims do not serve to patentably distinguish the claimed structure over that of the reference. See *In re Pearson*, 181 USPQ 641; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 512 USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

3. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Epworth (US Patent No. 6,626,589) in view of Griffin (US Pub. No. 2004/0021829) and further in view of Penninckx et al (US Patent No. 6,563,623).

Regarding claim 18, Epworth et al disclose an optical transmission system, shown in Fig. 2, comprising:

an optical DP-ASK transmitter including at least two modulators adapted to provide an optical DP-ASK modulated signal (see col. 2, lines 37-40); and

an optical receiver including:

a DPSK receiver including a delay interferometer and a balanced receiver to detect a DPSK modulated portion of the DP-ASK modulated signal (see col. 2, lines 46-65); and

an optical intensity receiver to detect an ASK modulated portion of the DP-ASK modulated signal (see col. 2, lines 46-65; the receiver detects power or intensity of the signal).

Epworth disclose transmission of DPSK-ASK signal as discussed above, and differs from the claimed invention in that Epworth do not disclose that the DPSK-ASK signal is 4-ary. Griffin teaches generation of 4-ary optical signal driven by synchronous data (see Fig. 1 and paragraphs [0021 and 0022]). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide 4-ary signal generation as taught by Griffin to the optical system of Epworth. One of ordinary skill in the art would have been motivated to do such in order to increase transmission capacity.

Furthermore, the combination of Epworth et al and Griffin discloses transmission of optical signal and differ from the claimed invention in that the combination does not specifically disclose that the optical signal has a prescribe optical signal. However, it is well known that the optical signal has extinction ratio. Penninckx et al is cited to show such well known concept. In col. 5, lines 13-16 and col. 6, lines 3-10, Penninckx et al teach of extinction ration in optical signal. Therefore it would have been obvious that the optical signal of Vrazel et al has extinction ratio.

Regarding claims 19 and 20, in view of combination above, Penninckx et al disclose an prescribed extinction ratio of between about 5 dB and about 10 dB (see col. 5, lines 13-16).

4. Claims 3, 7, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vrazel et al (US Pub. No. 2003/0198478) in view of Liu et al (US Pub. No. 2004/0125435).

Regarding claims 3 and 17, Vrazel et al disclose phase modulation and differ from the claimed invention in that Vrazel et al do not disclose post nonlinear-phase-shift compensation. Liu et al teach the use of nonlinear-phase-shift compensation (see Fig. 1). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide nonlinear-phase-shift compensation to the system of Vrazel et al in order to reduce nonlinear phase noise.

Regarding claims 7 and 14, Vrazel et al differ from the claimed invention in that Vrazel et al do not disclose providing pulse generation to allow for generation of RZ optical signals. Liu et al teach generation of RZ optical signals. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RZ optical signals (see paragraph [0046]).

Response to Arguments

5. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

6. Applicant's arguments filed 06 December 2006 have been fully considered but they are not persuasive. On page 7 of the remarks, applicant indicates that applicant

disagree with the obvious rejection of synchronous data signals. However, at the end of page 6 and beginning of page 7 of the remark, applicant acknowledged that such synchronization is well known.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS

2/22/07

DALZID SINGH
PRIMARY EXAMINER

Dalzid Singh